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(54) Title: PART-GEOMETRY INDEPENDANT REAL TIME CLOSED LOOP WELD POOL TEMPERATURE CONTROL SYSTEM FOR MULTI-LAYER DMD PROCESS

(57) Abstract: In a direct metal deposition system which builds up a metallic overlay on a substrate by moving the substrate relative to a laser in a metallic powder feed, the laser power is adjusted for successive layers by sensing the weld pool in a plurality of selected points in each layer and adjusting the power during successive layers to maintain a weld pool that corresponds to those achieved during deposition of a lower optimal layer. This compensates for heating of the substrate resulting from the deposition which tends to increase the pool size or temperature in the higher layers.

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